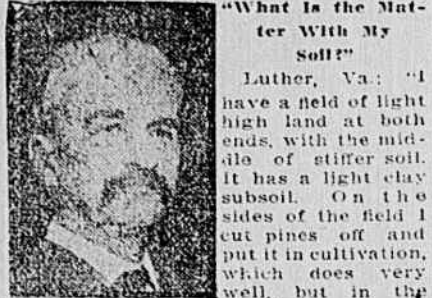


WITH THE FARMERS

By Prof. W. F. MASSEY

Saturday, October 11, 1913.



What is the Matter With My Soil?

Luther, Va.: "I have a field of light soil, with the middle of it stiffer soil. It has a light clay subsoil. On the sides of the field I cut pines off and put it in cultivation, which does very well. It is in the middle of it, it seems hard to make corn, although I get good wheat or it. I have been working this field in corn with peas sown among it and followed by wheat for the last five years and with each crop put in about 250 pounds of 10-4 fertilizer. Have always broken the land well, and worked with spring tooth cultivator. When corn gets about three feet high I throw soil to it with disk, having the disk next to the corn shallow enough to keep from cutting the roots, and when corn gets larger follow with cultivator, the Iron Age, leveling the land and sowing peas. The stiff part in the middle of the field, after making a good start in stalk, fires up and fails to make ears. I expect the land needs lime, but I am some distance from depot and have a steep hill to climb. Have a good crop of peas and corn grass to turn under. What would you advise to make a good crop of wheat and leave it in condition to make a crop of corn the next year?" Your letter is something of a puzzle. You say first that the two ends of the field make good, while it is hard to get corn in the middle, and then you say that it is the two ends that fail and fall. You are running too short a rotation, and turning under the peas has gotten the land acid, I have no doubt.

Now, if you will get some blue litmus paper and put a piece of it in some of the soil made wet with water, and it turns pink in half an hour, it shows that the soil is sour and needs lime. And if this is the case, the liming must be done, and 1,000 pounds spread after plowing for corn, and harrowed in. Then cut the corn off at the ground and stack it, and then mow the grass and cure for hay. Then disk the stubble fine as possible for wheat, going over and over with disk and spike harrow till the surface is fine. You can make better wheat in this way than by turning the peas all under, and can get forage to feed and make manure. Give the wheat 400 pounds of acid phosphate or Thomas phosphate. The latter will probably do best, as it carries 40 per cent of lime. Sow red clover on the wheat and run the land another year in clover, mowing the first crop for hay, and then let the second crop remain on the land, and during the winter spread on it all the manure made from feeding the hay and clover hay and corn stover, and straw, and turn all for corn, and you will make corn both ends and the middle if you lime after plowing for corn.

Greenhouse Trouble.
For two years I have been troubled in my greenhouse with mildew. It attacks parsley, lettuce and water-cress especially. I thought I had found a remedy in 10 lb. carbonate of soda, which is used for the same purpose. But last year it did not answer. Will spraying the soil with Bordeaux mixture before setting the plants be effective? In the first place, I would say, why do you want to grow parsley and lettuce in a greenhouse in this climate? You can grow both of them far better in a cold frame, especially if you use the double glazed sashes.

Mildew in a greenhouse is favored by irregular temperatures and drafts of air, but the best thing is to keep conditions in the house unfavorable to the fungus; a temperature uniform and adapted to the nature of the plants grown. Half hardy things need a lower night temperature than tender tropical plants, and even cannot be well grown in the same house. To prevent mildew, I have found one of the best things is to stake equal parts of lime and sulphur, and use the resulting liquid to paint on the hot water pipes. If mildew appears, spray with a tablespoonful of formaldehyde in two gallons of water. There is also an article sold by seedsmen called Fungine, which I have found good. Spraying the soil with Bordeaux mixture will have no effect on the mildew.

Tracing Plant Food in a Cornstalk.
Peacham County: "Will you please trace the phosphoric acid, nitrogen and potash through a cornstalk, and state the role each one plays in the making of that stalk, as plainly as you can?" And the writer adds: "Please send it to me by return mail, and does not think it worth even a 2-cent stamp. I do not give personal replies by mail and pay my own postage, so you will have to wait your turn in the paper. It may be of interest to many to know what is the effect on the plant of the different plant foods, so I will endeavor to tell some of the effects of the different forms used as fertilizers. All plant growth is made in little box-like forms called plant cells. These cells are filled by a substance resembling the white of an egg. This substance is the only thing in the plant that carries life, and the only part that has nitrogen in its structure. The roots take up water from the soil laden with plant food, and in the leaves this comes in contact with the carbon dioxide leaves get from the air, and the first thing we can detect in the plant cells is starch. The living matter, which is called protoplasm, uses this starch to build cell walls, and from the starch all the so-called carbohydrates in the plant are made, such as sugar, oil, acids, etc. In the youngest state of the cells, there are all in connection with each other, and the formed material is sent in every direction where new cells of growth are being made, up and down, to the top of the plant, and the extremity of the

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roots. It is found that the starch cannot be made unless there is an abundant supply of potash at hand. Starch is made in the presence of potash, but there is no potash in starch. When starch is formed it is conveyed by the phosphorus to all points where growth is being made, and also is stored in seeds and tubers for the future use of the plant. In some seeds, the starch is large, except in corn, and in some to sugar, and in most seeds is stored as starch. This is especially true in corn. Nitrogen, by supplying the living matter that does all the work in the plant, increases the vital energy and stimulates growth.

But growth consists in building new cell walls, and starch is needed for these, and unless there is plenty of potash the living materials cannot get enough building material, or material for making seed, and hence the importance of phosphorus and potassium in seed production. But to fully explain all the complex functions carried on in the plant would take a volume. And when you have a great corn stalk you will find that over 90 per cent of its bulk is made of air and not from the soil. There are numerous books on plant life that will fully explain these things.

You can dry and burn a large corn stalk till you have only white ashes left that you can hold in your hand. But you have destroyed nothing. You have destroyed the combination that nature had built up on the form of a corn stalk, but all the materials that went to make that corn stalk are still in existence, and the matter that came from the air are still in existence, and have gone back where they came from to be used in the making of other plants, and you hold in your hand the elements that the plant got from the soil, all except the nitrogen. The plant got from the soil, but in the ultimate analysis it too came from the air, and has gone back as a gas into the air, and can be captured again by a wise farmer who grows the legume crops. All the woody matter, the starch, the sugar, the oil and the acids, came from the air and have gone back there. The only part of these that came from the soil was the air where it came from the soil, and will return to the soil in the rains. The water that turns the mill wheel flows on to the sea, and evaporates into the clouds, and comes back to run the wheel again. Nothing in nature has been destroyed. The materials that make the corn plant have always been in existence, and may have constituted parts of millions of corn plants and other plants, or millions of animals. We are told by the Master to "consider the lilies, how they grow," and yet how few there are who study how the lilies or any other plant grows. Some years ago a farmer wrote to a morning paper in Raleigh, N. C., saying that he noticed that his spring swelled up before a rain, and wanted to know the reason.

This was in the late fall, and the wise editor told him that it was easy to explain, as that season of the year the sap was running in the trees, and he swelled in the spring. This was so ridiculous that I wrote some explanation of the functions of trees, and I met intelligent men, college-bred men, who said, "Do you mean that what we have always been taught, that the sap rises in the spring and goes down in the fall is not true?" I assured them that it was certainly not true, and that no roots ever leaked, and that the sap that rises in the spring is not sap at all, but merely water in which the plant food from the soil is dissolved, and the true sap, the material for growth, is formed in the leaves, and sent in every direction in the plant, but not a drop of it ever leaks out the roots, though a great deal of the water is evaporated into the air by the leaves, and the sap in this way is concentrated. The true explanation of the swelling of the spring before a rain was that there is a decrease of atmospheric pressure just before rain, and the mercury will swell in the same way in the cup of a barometer, bringing it down in the tube. All good farmers should consider how the lilies grow if they want to know how to treat plants and feed them.

Preparing for Tomatoes.
Halifax County: "I have been reading your columns in The Times-Dispatch, and find them timely and helpful. I have a field, mostly sandy, and want to plant a red clay. It was in cowpeas last year, followed by oats, with a good application of basic slag. The crop of oats was good, and the stubble was broken seven inches deep, and sown to cowpeas rather late on account of dry weather. They are now about fifteen inches high, with half a stand of volunteer oats in the peas. I wish to plant this field in tomatoes next season. What would you advise to do? Can I get hay from these oats, and what kind of fertilizer should I use on the tomatoes?" In your section there is still time to sow cowpeas, cover up to the middle of October. I would turn the peas and oats under now, and sow crimson clover seed. This will give a better winter cover, and can be turned under in the spring in time for setting the tomatoes, and it will pay, even if the clover has not run to bloom before it is necessary to plow for the tomatoes. With two legume crops turned under, you will need for the tomatoes 500 pounds of acid phosphate and twenty-five pounds of sulphate of potash. Harrow these in broadcast.

If, as I suppose, you are planting the tomatoes for canning, get the best seed of the Stone or the Success tomato. Now it will pay you to start the tomato seed rather early in a frame under glass sashes, and transplant them to larger frames covered with cloth for hardening them and getting strong plants to set. Sowing seed in the open ground and transplanting to the field directly from the seed rows, makes the crop late, as it takes some time for these plants with small roots to get started. But where they are started under protection and transplanted, they get a mass of good roots and are far easier to transplant and grow off far better.

The Tenant System.
Alexandria: "Some time since I saw in The Times-Dispatch an account of the agreement between owner of land and tenant, and you said that it was satisfactory in Maryland, where it originated. I failed to clip the article. Will you please write me another copy?" I am too busy a man to keep writing about this, as many are requesting. The Department of Agriculture has issued a bulletin on the Maryland tenant system, giving a full account of one of the largest estates. This is one of the series of farmers' bulletins, and is entitled "The Tenant System and Its Results." Now I hope that all who are interested in this matter will write to the Secretary of Agriculture and ask for a copy of this bulletin, which will tell the whole better than I could in a dozen letters, which I have no time to write.

CITY WILL HAVE ITS OWN GARAGE

Board Plans to Convert Old Meat Market Into Home for Motors.

STALLHOLDERS MUST MOVE

Notified That Leases Will Not Be Renewed After January 1.

Richmond is to have a municipal garage. It will be located in the building on Marshall Street, between Sixth and Seventh Streets, at present used by the city as a meat market.

Holders of stalls were notified yesterday that their leases will not be renewed on January 1, and that the rental of space in the building will be discontinued. Occupants will have the privilege of removing from the premises all improvements installed by them, as well as all fixtures.

The action was taken at the instance of E. C. Folkes, who, under the new division of duties, has supervision over all markets. Mr. Folkes is one of the chief supporters of the municipal garage idea, and is in favor of converting the old meat market into a home for the motor trucks and automobiles which have in the past year or two been added to the equipment of several of the city departments.

Market Looking Out.
While it has not officially been decided to establish a city garage at this point, it was freely admitted by members of the board yesterday that the vacant stalls served upon stallholders yesterday is the preliminary move toward this end. The board looks with favor upon the plan of utilizing the old meat market for this purpose, most of the members holding the belief that its usefulness in the present capacity is daily growing less.

"The market is gradually losing out," said Henry P. Beck yesterday, discussing the plan. "It served a good purpose in the days when it was customary to get up early in the morning and go to the market to lay in a stock of provisions for the day's consumption. Markets are growing fewer and fewer every year now. This is particularly true of the Sixth Street Market. The telephone and the green grocer have worked a revolution. People do their marketing at the corner grocery."

The vacating notice will affect about sixteen stallholders, who will be taken care of in the vegetable and fish market under the Blues' Armory. At present the vegetable and meat markets have empty stalls. The consolidation will do away with the empty stalls in the vegetable market that now go to waste, and the old meat market will be put to full use.

House Electrical Department.
If the present tentative plans are carried out the old meat market will be subdivided to take care of the office and storage rooms of the city electric department, for which outside quarters are now rented at \$720 a year. The only objection to the plan of converting of the building into a municipal garage is its high value as business property. The garage service could be secured at a much smaller investment by purchasing and building on unimproved land further out. For the present, however, the building will be put to this use. When the city's motor equipment becomes large enough to demand more capacious quarters the board will probably recommend the building of a large municipal garage in the outskirts. In that event the present market building could be sold for use as stores or remodeled to take care of some other more important municipal activity.

Meetings
MEMBERS OF HENRICO LODGE, NO. 41, A. S. & A. Mason, are requested to meet SUNDAY, October 12, 1913, 8 A. M., at Masonic Temple, 511 East Clay Street, to attend the funeral of Brother Joshua Anthony. All members of sister lodges are respectfully invited to attend.
By order of W. H. ANDERSON, Secretary.

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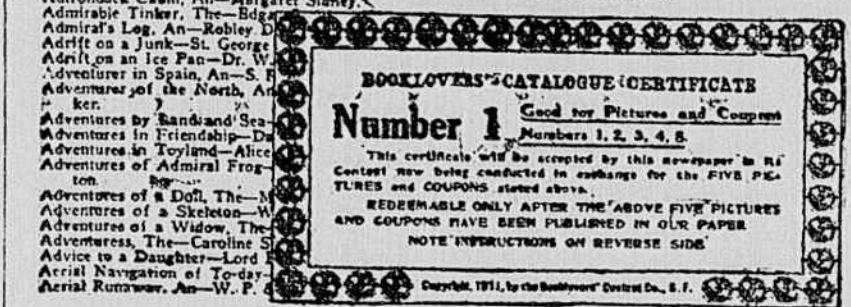
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Last Booklovers' Contest Picture To-day

Do Not Send in Your Set Until Monday, October 27th.
All Sets Must Be In By 6 P. M. of Saturday, November 1st.
Answer Books and Catalogues and Pictures May Be Secured Until 6 P. M. of Saturday, October 25th.

CONTEST EDITOR'S ::::OFFICIAL:::: Booklovers' Catalogue

Here is a portion of one of the pages of the Catalogue, showing how the titles are listed in alphabetical order. One of the catalogue certificates, redeemable for five free pictures, is shown also. The 77 titles which the 77 pictures represent are contained in this catalogue, and YOU can find them there.



USE THIS ORDER BLANK FOR CATALOGUE

If you cut this order form, fill it out and send or bring it in with the sum designated, you will receive the Official Copyrighted Contest Catalogue of about 5,000 book titles, and seven certificates redeemable for the first thirty-five pictures in the contest. In the catalogue are all the correct titles to the seventy-seven pictures. Catalogue, 35 cents at this office, 40 cents by mail.

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Here Are the Judges of the Booklovers' Contest Game:

HON. GEO. AINSLIE, Mayor of Richmond.
REV. EDW. N. CALISCH, Ph.D., A Distinguished Scholar and Writer.
W. L. PRINCE, Dean of Richmond Academy.

Their names stand as an absolute guarantee of the fairness of the contest, and they will have immediate and personal charge of the contest, and will see that an impartial awarding of the prizes is made. The checking of the sets of answers will be entirely in their charge.

The Answer Book Helps You

The Answer Book contains seventy-seven double pages. You paste in it one copy of each picture, and below it you write from one to ten answers to each one. One copy of a picture is all you need, and you can submit \$38.50 worth of answers.

The Answer Book is similar to a stenographer's note-book, being bound at the top. The top pages are numbered from one to seventy-seven, inclusive. Each of the bottom pages has ten blank spaces ruled off on it. One copy of each of the seventy-seven pictures is pasted by the contestant on the seventy-seven top pages. On the bottom pages, beneath where each picture is pasted, the contestant writes down from one to ten answers.

BEWARE OF FAKERS Who Offer to Sell Worthless List of Titles---They Cannot Help You How They Work

These fakers generally advertise that for a 2-cent stamp they will send several titles, which, in the opinion of the fakers, will prove correct titles to the pictures. Accompanying the "sample" lists of titles will be a letter advising that for 50 cents, a dollar, two dollars, or more, they will supply lists of titles that will seem to fit the pictures. Don't deal with these sharpers. If they could furnish a list of titles, they would solve the pictures—they would use their own lists and win the prizes. They know no more about the titles than you do.

The principal features in connection with this contest are copyrighted by the Booklovers' Contest Co., San Francisco, Cal.

THIS IS A SAMPLE OF THE

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INSTRUCTIONS and EXPLANATIONS

PASTE PICTURE BELOW THIS LINE

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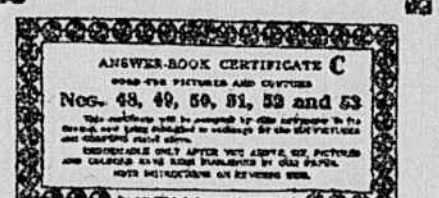
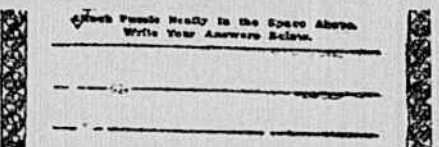
INSTRUCTIONS AND EXPLANATIONS

Read the Contest rules in our paper. You will then know the number of puzzles that will be published during the contest, also how many answers you may submit to each one.

As each puzzle appears in the paper, cut it out. Try it neatly around the heavy dotted lines, attach same carefully on this sheet.

Each puzzle is numbered. When you have attached same in this space, study it carefully, and submit your answers on the page below.

In the space on the page below is plenty of room for submitting one or as many replies to this puzzle as the rules of the Contest allow.



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What Book Does This Picture Represent? Write Title and Name of Author in Form Below

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TOTAL NUMBER OF PICTURES, 77. Contest began July 27th. Each day a different picture appears in this space. Cut them out. Save them until the last picture appears on October 11th. Don't send in partial lists. Wait until you have all the answers to the 77. Read Rules, Daily Story and Special Announcements in another part of this paper. It will help you win a prize. Extra pictures and coupons of any date that have appeared may be had at 2c. Enter to-day without registering your name. Merely Save Pictures and Coupons as they appear.